

**California Energy Commission  
2004 Transmission Update Workshop, June 14, 2004  
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**Comments of David Olsen, Director  
Center for Energy Efficiency and Renewable Technologies**

**Options for Optimizing Use of Existing Transmission Assets  
as an Alternative to New Construction**

**Report on Work Underway in the Rocky Mountain  
Area Transmission Study (RMATS )**

RMATS established a Tariff and Regulatory Issues Work Group (TRWG) to explore opportunities to make more efficient use of existing transmission assets without new transmission construction.

Contractual, tariff and operational practices limit the utilization of existing transmission assets. Such institutional impediments also limit transmission access and raise the cost of operating and expanding the grid. Removing or reducing these impediments would support fuller, more optimal use of the existing system, and could defer some capital investment in grid expansion.

These impediments greatly limit transmission access for new market entrants. All firm capacity (ATC) across most of the major paths of the WECC is already reserved under long-term contracts; none is available. But a large amount of the physical transfer capacity of the lines in these paths appears to go unused in most hours of the year, after accounting for capacity reserved to meet stability needs.

**Constrained Path Case Study**

As an intermittent resource having no fuel cost, wind projects have more flexibility than other generators to make use of transmission service that may be available in certain periods but not in others. Using wind power as an example, RMATS has organized a case study to explore tariff and operational practices that would enable new resources to take advantage of unused physically available transmission capacity.

Case study participants include the owners and operators of the subject paths: Basin Electric, NorthWestern, PacifiCorp, Tri-State, WAPA, Xcel; wind and coal

project development companies; and FERC. Peak Power Engineering is providing the analysis of WECC EHV data, under an NREL/DOE contract.

The case study will determine the amount and diurnal/seasonal timing of such unused capacity on three constrained paths: Tot 3 (SE Wyoming to Denver); West of Naughton (SW Wyoming to Salt Lake City); and Montana to the Northwest. If the amount of reserved but unused capacity is large enough to justify further consideration, the Work Group will explore contractual, tariff and operational mechanisms to make use of such capacity.

These mechanisms may include: displacement and energy swaps (substituting wind power added in one part of a system for system resources in another area of the system); storage and return (accepting wind power in one time period and delivering it in another); dynamic scheduling (regulation and control area responsibilities moved from the interconnecting control area to another); and expanded use of network service and Remedial Action Schemes.

For example, two Colorado wind projects connected to the Western Area Power Administration system north of the Tot 3 constraint are "dynamically scheduled" to Xcel's control area south of the constraint. A National Wind Coordinating Committee report on "Virtual Wheeling" (NWCC 2001) outlined methods of moving wind to markets across constrained interfaces by substituting wind power in time and place for system power. In the case of PacifiCorp and Xcel, high transmission costs across Tot 3 were avoided by substituting 25 MW of PacifiCorp-system power in NW Colorado for 25 MW of Xcel-owned wind at the Wyoming Foote Creek Rim wind site. On the AEP WTU system, wind production that would otherwise have been curtailed behind a transmission constraint in West Texas was taken in by WTU and delivered later, when transmission was available.

Such mechanisms may have the potential to increase inter-regional power transfer in the short-term, years sooner than physical upgrades could be constructed. Utilizing existing assets more fully could also provide additional revenue to the owners of the transmission lines.

#### Flexible-Firm Transmission Service

Long-term firm service is not available on any of the target paths, and power projects cannot be financed with either short-term firm or non-firm service. Taking advantage of the unused physical OTC on RMATS paths may require development of a "Flexible-Firm" or "Curtaillable-Firm" transmission service product. Some power projects can accept curtailment risk, as long as it is limited

contractually. If appropriate, the case study will develop a pilot "Flexible-Firm" tariff amendment to be filed with WAPA and at FERC.

#### Consideration of Alternatives to New Construction

To win political support for its recommendations and facilitate NEPA review, RMATS must be able to show the Governors, regulators and the public that it has considered all feasible alternatives to transmission construction. The results of this case study will indicate the possible extent to which non-construction alternatives can increase power flow across both intra- and inter-regional paths. This case study thus complements the economic modeling to identify cost-effective upgrades/new construction that makes up the core of the RMATS expansion plan.

These tariff and operational mechanisms to make fuller use of existing transmission may be of particular interest in California, especially considering the acceleration of renewable energy goals contemplated by the Energy Action Plan.

For further information on alternatives to transmission considered in the RMATS study, contact:

David Olsen, Center for Energy Efficiency and Renewable Technologies  
[olsen@avenuecable.com](mailto:olsen@avenuecable.com) 805 653-6881.